

Commissioner for Patents
Washington, D.C. 20231

PRELIMINARY AMENDMENT

Prior to examination, please amend the application as follows:

In the specification:

Replace the paragraph beginning at page 1, line 1 with the following rewritten paragraph:

-- This application is a continuation of U.S. Serial No. 09/262,159, filed March 3, 1999, which was a continuation-in-part of PCT/US98/18401 filed September 3, 1998, which published in English on March 11, 1999, which was a continuation-in-part of U.S. Serial No. 08/922,292, filed September 3, 1997. --

In the claims:

Cancel claims 19-33.

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Please add the following new claims:

34. A non-woven loop fabric for engaging hooks in a hook-and-loop fastener, the fabric having a basis weight of less than about 2 ounces per square yard and comprising a stretched, non-woven mat of fibers entangled at knots therein, the mat having a front side and free-standing and spaced-apart loop structures extending at least from the front side of the mat from the knots in the mat, said structures defining hook-engageable loops and corresponding associated knots,

the mat being stabilized in a condition of at least 20 percent areal stretch.

35. The loop fabric of claim 34 wherein the mat is stabilized in a condition of at least 50 percent areal stretch.

36. The loop fabric of claim 34 wherein the mat is stabilized in a condition of at least 100 percent areal stretch.

37. The loop fabric of claim 34 wherein at least some of the knots of the mat are secured to resist relative fiber motion therein and further stretching of the fabric.

38. The loop fabric of claim 37 further comprising a binder to secure the fibers of the loop structures at their associated knots.

39. The loop fabric of claim 38 wherein the binder is solidified, fluid-applied binder.

40. The loop fabric of claim 38 comprising between about 20 and 40 percent binder, by weight.

41. The loop fabric of claim 38 wherein the binder is selected from the group consisting of acrylics, urethanes, polyvinyls, formaldehydes, glyoxals and epoxies.

42. The loop fabric of claim 38 wherein the binder comprises a fire-retardant material.

43. The loop fabric of claim 38 wherein the binder comprises polymer filaments entangled among said fibers, said filaments being at least partially melted to encapsulate said knots.

44. The loop fabric of claim 38 wherein the binder forms a backing that is adapted to be welded to a substrate.

45. The loop fabric of claim 34 wherein at least some of the loop structures each comprise multiple loops emanating from a common fiber knot.

46. The loop fabric of claim 34 having an overall thickness, including the mat and a majority of the loop structures, of less than about 0.150 inch.

47. The loop fabric of claim 34 wherein the loops extend to an average loop height from their associated entanglements, measured as the perpendicular distance from the mat, of between about 0.020 and 0.060 inch.

48. The loop fabric of claim 47 wherein the fabric has an overall thickness, including the mat and a majority of the loop structures, and wherein the average loop height is between about 0.5 and 0.6 times the overall thickness of the fabric.

49. The loop fabric of claim 34 having a knot density of between about 50 and 1000 knots per square inch of mat.

50. The loop fabric of claim 49 having a knot density of between about 100 and 600 knots per square inch of mat.

51. The loop fabric of claim 50 having a knot density of between about 150 and 300 knots per square inch of mat.

52. The loop fabric of claim 34 wherein the fibers generally have a tenacity of at least 2.8 grams per denier.

53. The loop fabric of claim 34 wherein the fibers generally have a tenacity of at least 5 grams per denier.

54. The loop fabric of claim 53 wherein the fibers generally have a tenacity of at least 8 grams per denier.

55. The loop fabric of claim 34 wherein the loops of the loop structures extend from the mat to varied heights to form a multi-level arrangement of hook-engageable loops.

56. The loop fabric of claim 34 wherein at least some of the loop structures each comprise
a common, elongated trunk portion extending from the mat from an associated knot and multiple loops extending from the trunk portion.

57. The loop fabric of claim 34 wherein the loop structures generally each comprise three or more hook-engageable loops.

58. The loop fabric of claim 34 wherein the fibers are generally of 15 denier or less.

59. The loop fabric of claim 34 wherein the fibers are generally of 8 denier or less.

60. The loop fabric of claim 34 wherein the fibers are crimped at a crimp density of at least about 7 crimps per inch.

61. The loop fabric of claim 34 wherein the fibers are of a material selected from the group consisting of polyester, polyurethane, polypropylene, polyethylene, nylon, homopolymers, mixtures, copolymers, alloys or coextrusions thereof and natural fibers.

62. The loop fabric of claim 34 having a Gurley stiffness of less than about 300 milligrams.

63. The loop fabric of claim 62 having a Gurley stiffness of less than about 100 milligrams.

64. A loop product for hook-and-loop fastening, comprising
a stretched, non-woven fabric of entangled fibers having front and back surfaces, the front surface having exposed, through-forced loops of said fibers extending therefrom capable of being engaged by a hook-type fasteners, and
a binder securing the fibers at the back surface of the fabric to resist further elongation of the fabric,
and stabilizing the fabric in a state of at least 20 percent areal stretch.

65. A loop product for hook-and-loop fastening, comprising
a stretched, non-woven fabric of entangled fibers having front and back surfaces, the front and back surfaces having exposed, through-forced loops of said fibers extending therefrom capable of being engaged by hook-type fasteners,
a binder securing the fibers to resist further elongation of the fabric,
and stabilizing the fabric in a state of at least 20 percent areal stretch.

66. A hook-and-loop fastener, comprising
the loop component or loop product, respectively of claim 1 or 34 and

a hook portion having an array of hooking elements extending from a sheet-form base, the hooking elements constructed to engage the hook-engageable loops of the loop component or loop product to form a releasable fastening.

67. The hook-and-loop fastener of claim 66 having an overall thickness, engaged and at rest, of about 0.075 inch or less.

68. The hook-and-loop fastener of claim 67 having an overall thickness, engaged and at rest, of about 0.050 inch or less.

69. A substrate comprising
a surface layer of thermoplastic material and
the loop component or loop product of claim 1 or 34, respectively, at least some of the fibers of the fabric of the loop component or loop product opposite the hook-engageable loops encapsulated within the layer of thermoplastic material.

70. A package comprising
a first closure portion comprising the loop component or loop product of claim 1, 6 or 34, respectively; and
a second closure portion having a hook product comprising an array of hooking elements extending from a sheet-form base, the hooking elements constructed to engage the extended loops of the loop component or loop product to hold the package in an open or closed position.

71. The package of claim 70 wherein the loop component or loop product and the hook product have a combined overall thickness, engaged and at rest, of less than about 0.075 inch.

72. A disposable article of clothing comprising
the loop component or loop product of claim 1 or 34, respectively, and

a fastener with hooking elements arranged to engage the loops of the fabric to form a releasable fastening to retain the article of clothing on a wearer.

73. The disposable article of clothing of claim 72 comprising a surgical gown.

74. The disposable article of clothing of claim 72 comprising a diaper.

75. The disposable article of clothing of claim 72 wherein the fabric comprises a binder forming a water-resistant liner.

76. An air filter comprising the loop component or loop product of claim 1 or 34, respectively, constructed to intercept and filter a flow of air.

77. A method of forming a loop product for a hook-and-loop fastener, the method comprising the steps of

forming a batt of loose, staple fibers;

entangling the fibers to produce a non-woven fabric of fibers joined at entanglements, with loops of some of the fibers extending from at least one side of the fabric;

subsequently stretching the fabric to a state of at least 20 percent areal stretch to tighten the entanglements to form knots,

and binding the knots to hold the fabric in its stretched state.

78. A method of forming a loop product for a hook-and-loop fastener, the method comprising the steps of

forming a batt of loose, staple fibers;

forcing some of said fibers through the batt, thereby entangling the fibers to produce a non-woven fabric of fibers joined at entanglements, and also thereby forming fibrous loops extending from one side of the fabric;

coating at least some of the entanglements of the fabric with a fluid binder; and

subsequently stretching the fabric to a state of at least 20 percent areal stretch to tighten the entanglements to form knots, the binder adapted to solidify and hold the fabric in its stretched state.

79. The method of claim 78 wherein the batt is through-punched with needles.

80. The method of claim 78 wherein fibers are forced through the batt for entangling the fiber

by needling the batt a first time with a needle-punching density of at least 100 punches per square inch, and

needling the batt at least a second time with a needle-punching density.

81. The method of claim 80 wherein the batt is needled a final time with a needle-punching density of between about 1200 and 1600 punches per square inch.

82. The method of claim 78 wherein the batt is needled a first time in a first direction, and needled said subsequent time in a second direction, the second direction opposite the first direction.

83. The method of claim 77 further comprising setting a binder applied to the fabric to stiffen the knots of the stretched fabric.

84. The method of claim 78 wherein the fabric is stretched by at least 15 percent in a cross-machine direction.

85. The method of claim 78 wherein the fabric is stretched to increase its area by at least about 50 percent.

86. The method of claim 78 wherein the fabric is stretched to increase its area by at least about 100 percent.

87. The method of claim 78 wherein the step of stretching produces a fabric with a width of at least about five feet.

88. The method of claim 78 further comprising the step of brushing said loops to disentangle loosely-held loop fibers.

89. A method of forming a loop component of a hook and loop fastener comprising forming a stretchable non-woven fabric comprised of entangled fibers, some of the fibers forming hook-engageable loops that extend from the entanglements, thereafter stretching the thus formed web to a state of at least 20 percent areal stretch, thereby tightening at least some of the entanglements into knots, and thereafter binding the stretched fabric to give it stability.

REMARKS

Claims 1-18 are original claims of the direct parent of this continuation application.

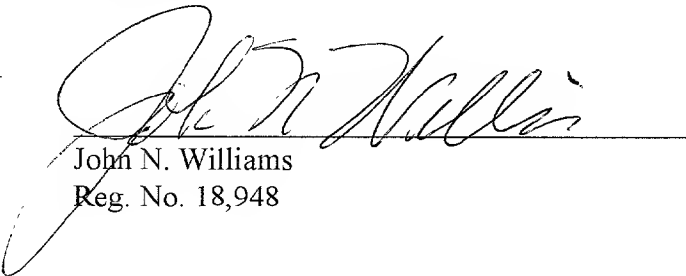
The added claims are based, in large part, on claims restricted out of the original parent application, Serial No. 08/922,292, filed September 3, 1997.

Applicant asks that all claims be examined. Enclosed is a \$2574 check for filing fee. Please apply any other charges or credits to Deposit Account No. 06-1050.

Respectfully submitted,

Date:

Nov 27, 2001



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